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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

FOREST INSECT INVESTIGATIONS

Project

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FOREST INSECT SURVEY - SEASON OF 1945

LASSEN VOLCANIC NATIONAL PARK

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Forest Insect Laboratory
Berkeley 4, California
December 28, 1945

SUBJECT-

INDEX NO.-

U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
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LASSEN VOLCANIC NATIONAL PARK

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LASSEN VOLCANIC NATIONAL PARK

FIELD EXAMINATION

During the period September 17 to 19 and again on September 27, 1945, Messrs. Patterson, Hall, Startt and Johnson of the Forest Insect Laboratory at Berkeley made an insect survey of Lassen Volcanic National Park. The purpose of this survey was to determine the amount and character of bark beetle infestations in the Park forests and to appraise the extent of resulting depredations sustained during the years 1944 and 1945.

A memorandum covering the current insect conditions in the Park, based on the data secured in the survey, together with recommendations for maintenance control on certain areas was prepared and submitted by Patterson on September 28. Before leaving the Park these conditions and the recommended control work were discussed with Superintendent Lloyd and Chief Ranger Potts.

AREAS EXAMINED

Hall and Patterson examined the areas situated in the southern part of the Park, mainly Warner Valley and south White Mountains. Startt and Patterson examined the western and north central sections, including the areas adjacent to the Loop road, Lost Creek, Manzanita, Loomis, Badger Flat, and the extensive lodgepole pine areas around Cluster Lakes and Twin Lakes. Butte Lake area was examined by Johnson and Patterson. The location and relationship of these areas are shown on the attached map.

SURVEY METHODS EMPLOYED

Survey data secured resulted from cruise of roadside plots, road and trail traverse, and spotting from observation points. Measured losses were obtained from roadside plots only.

CONTROL WORK CARRIED OUT IN 1944-1945

Direct control work by the peel-burn method was carried out in the fall of 1944 in Manzanita and Lost Creek units. This work resulted in the treatment of 76 infested trees containing a total volume of 108,450 board feet. They were principally Jeffrey pine and ponderosa pine; 50 of these trees were located in Manzanita unit and 26 occurred in Lost Creek unit. The control work was efficiently done and while it was successful in eliminating a high percentage of the then existing infestation sufficient residual infestation remained to constitute a hazard in these stands.

CURRENT INSECT LOSSES AND TRENDS

Current losses are confined to Jeffrey pine and ponderosa pine which are caused by the Jeffrey pine beetle and the western pine beetle respectively.

The 1945 survey revealed that current insect losses are generally low throughout the Park forests. The data secured indicate, however, that the infestation trend is upward and that increasing losses may be expected. While the general situation is decidedly endemic, there are a few areas where local infestations are critical, resulting in loss of valuable trees on areas intensively used. Such conditions are found on Sections 3, 4, 10 and 11 in Lost Creek area; and in Sections 7, 8, 17, 18 and 20 in Manzanita area. Losses during 1945 are generally scattered throughout these two areas. No grouping of infested trees was found. The infestation is largely confined to ponderosa pine and Jeffrey pine; a few white firs are involved. Losses in other pine stands situated in Warner Valley, Badger and Butte Lake areas are light to normal and without noticeable change from the previous status. Losses throughout the fir forests are extremely low for these stands and show no indication of early change. Considerable flagging is prevalent in fir, especially red fir, and is highly conspicuous because of the many red terminals and lateral branches of affected trees. This condition apparently results from a combination of mistletoe and fungus attacks, but has no direct bearing on bark beetle losses. Infestations in lodgepole pine have increased throughout all lodgepole stands. The increase during 1944 and 1945 has been slight in the southern part of the Park, but is of considerable magnitude in the pure stands of lodgepole of the north central sections.

A summary of measured losses from established roadside plots and an estimate of losses by units are given in Tables 1 and 2.

INSECTS INVOLVED IN CURRENT DEPREDACTIONS

Western pine beetle, Dendroctonus brevicornis Lec., in ponderosa pine; Jeffrey pine beetle, D. jeffreyi Hopk., in Jeffrey pine; mountain pine beetle, D. monticolae Hopk., in lodgepole pine and western white pine; Ips confusus Lec., and Ips emarginatus Lec., in ponderosa, Jeffrey and sugar pine. Both white and red fir is attacked by Scolytus ventralis Lec. and Tetropium abietis Fall, usually in combination.

SPECIAL DEVELOPMENTS DURING SEASON

Recurrent infestation of moderate intensity developed in the stands of Manzanita and Lost Creek areas where the recent control work of 1944 was carried out. Conditions here are not critical, but because of high recreational values minimum losses are damaging. Recent widespread activity of the mountain pine beetle in the vast lodgepole pine stands in the north central plateau region are indicative of an upward trend in losses. Losses caused by this beetle have been low during the past five years. However, attacks during 1945 have increased over 100 percent locally where previous losses have been centered. At present this infestation is largely confined to Hat Mountain, Summit Lake and Badger units and occurs in scattered groups

ranging from 10 to 30 attacked trees in each group. It is of insufficient magnitude at present to warrant immediate control measures, but the situation should be closely watched to detect further increase in losses or coalescing of groups. Should this condition occur, control will be necessary to prevent widespread epidemic losses.

AREAS REQUIRING SPECIAL ATTENTION AND CONTROL RECOMMENDATIONS

Of immediate concern is the reinfestation which developed following the control work carried out last year in the ponderosa-Jeffrey pine stands in Manzanita and Lost Creek units. The current infestation in these stands is only moderate in intensity with attacked trees occurring singly and widely scattered. However, maintenance control is recommended because of the high recreational values at stake and also to augment the control work carried out here last year. The number of infested trees that should be treated is estimated to be 15 trees in Lost Creek unit and 25 trees in Manzanita unit. The peel-burn method is recommended for treatment of these trees. The control work can be done any time prior to May 31, 1946.

The lodgepole pine areas discussed in the preceding section should be closely watched during the 1946 attack period, which will occur from July 15 to September 15. This mountain pine beetle infestation appears to be concentrating around Soap Lake, Cluster Lakes, Twin Lakes and lower Hat Creek.

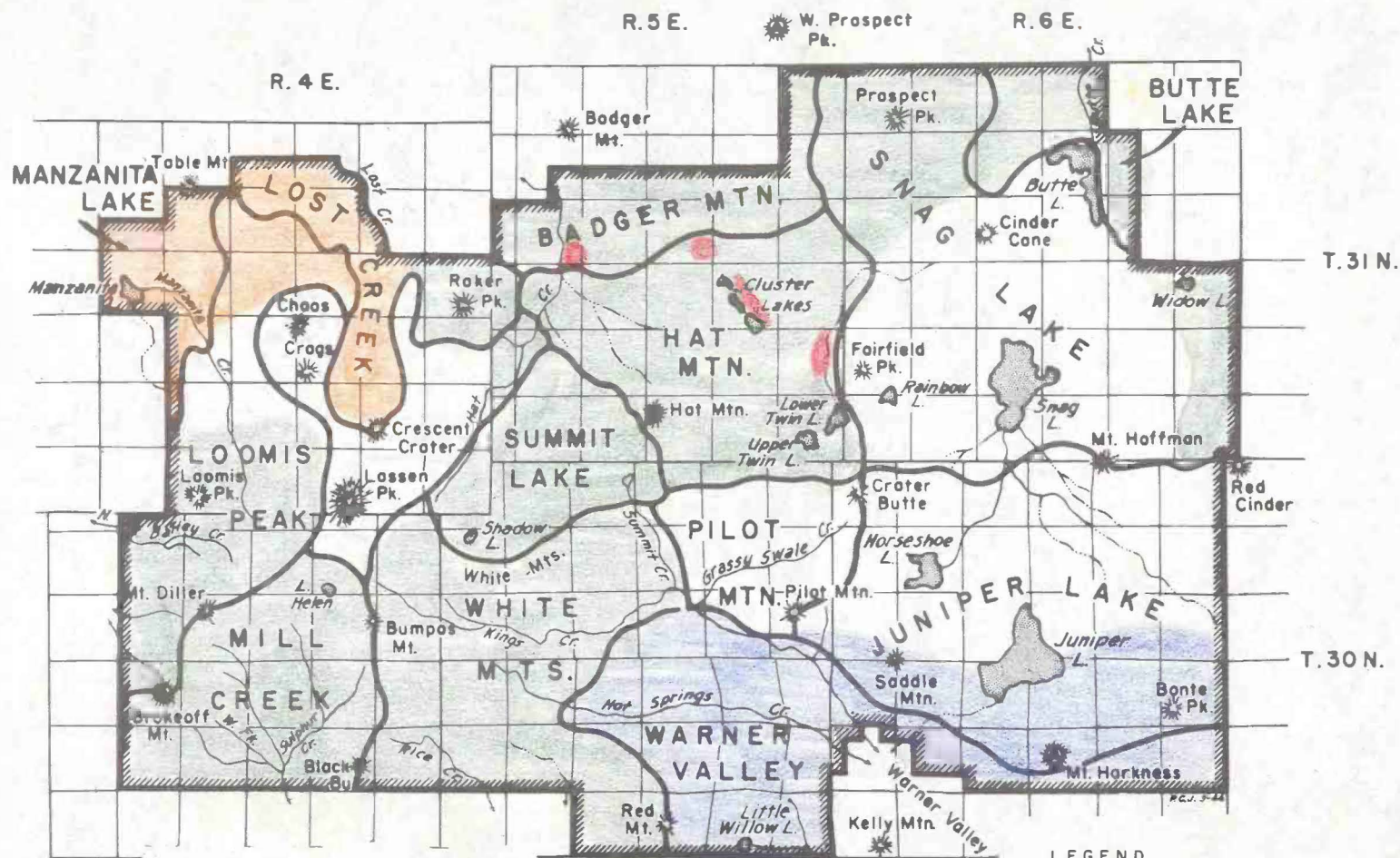
The recreational grounds at Butte Lake are subject to recurrent infestations due to the presence of camp fires and other abnormal usages and should be kept under surveillance to detect any increased infestation.

Table 1. Measured tree losses sustained on roadside plots (RD) in 1944-45.

Unit	Sample	Acres	Tree species	Comparative loss - two years							
				1944				1945			
				Total Trees	Volume	Aver./ac. Trees	/ac. Vol.	Total Trees	Volume	Aver./ac. Trees	/ac. Vol.
Lost Creek	RD-1	200	JP	3	1,520	.015	8	2	1,260	.01	6
White Mtn.	RD-2	112	RF	12	6,780	.11	60	6	3,630	.05	32
	RD-5	80	RF	2	860	.025	11	2	940	.025	12
Warner Vly.	RD-3	160	WF	3	3,990	.02	25	0	0	0	0
			JP	5	5,160	.03	32	1	180	.01	1
Mill Creek	RD-4	168	RF	4	5,720	.02	34	4	2,180	.02	13
Loomis	RD-6	60	JP	1	680	.01	11	2	1,060	.03	18
Manzanita	RD-7	116	JP	2	590	.02	5	4	2,750	.04	24
Summit Lake	RD-8	132	LP	8	1,450	.06	11	2	1,210	.01	10
	RD-9	108	LP	3	540	.03	5	1	310	.01	3
Hat Mtn.	RD-10	116	LP	10	1,760	.1	15	2	550	.02	5
Butte Lake	RD-11	160	PP	2	3,140	.01	20	1	1,720	.007	11
			JP	1	1,540	.007	10	1	1,720	.007	12
Totals(All Samples)1412				56	33,730	.457	247	28	17,510	.239	147
Averages per sample 128				5	3,066	.041	22	3	1,592	.022	13

Table 2. Summary of estimated timber losses by bark beetles in 1944 and 1945

Unit	Timbered acreage	Trees killed 1944 (Complete record)			Trees killed 1945 (Partial record)		
		Pine	Fir	Total	Pine	Fir	Total
1. Manzanita	2,560	60	20	80	35	15	50
2. Lost Creek	3,200	35	15	50	20	10	30
3. Badger	4,480	25	0	25	20	0	20
4. Butte Lake	2,240	30	0	30	35	0	35
5. Warner Valley	8,960	45	35	80	40	20	60
6. Summit Lake	3,200	50	40	90	40	30	70
7. Hat Mountain	8,320	70	20	90	150	50	200
8. Snag Lake	12,800	was not surveyed					
9. Juniper Lake	12,800	was not surveyed					
10. Pilot Mtn.	3,840	was not surveyed					
11. White Mtn.	7,680	0	270	270	0	120	120
12. Mill Creek	6,400	0	160	160	0	150	150
13. Loomis	7,680	20	20	40	25	15	40
Totals	80,640	335	580	915	365	410	775



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LASSEN VOLCANIC NATIONAL PARK
CALIFORNIA

SEASON OF 1945

SCALE 0 1 2 MILES

Note: Uncolored areas indicate non-timbered areas, or sections not covered by 1945 survey.

LEGEND

CONIFEROUS STANDS

- Infestation Normal
- Light
- Moderate
- Heavy

BOUNDARY LINES

- Park Boundary
- Entomological Units

GROUND SAMPLES

- Plots
- Strips
- Observation Plots

6 copies typed; distribution as follows:

- 1 - FCC
- 1 - Berkeley
- 2 - Ward Service (1 for Chicago Office)
- 1 - Supt. Lloyd
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